INTERACTIONS BETWEEN PARTICULATE AND TEMPERATURE ON NON-ACCIDENTAL DEATHS OF DIFFERENT GENDERS IN BEIJING, CHINA

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Background and Aims To explore the interaction between particulate matter (TSP and PM_{10}) and temperature on non-accidental deaths of different genders.

Methods A Poisson semi-parametric generalized additive models (GAM) was used to examine whether there is interactive effects of particulate matter and temperature on non-accidental deaths. The split point of low, medium, high temperature layer was determined based on the sensitivity tests.

Results According to the results of sensitivity tests, P_{20}/P_{80} and P_{25}/P_{75} were determined as the split point of low, medium, high temperature layer. In the model with P_{20}/P_{80} split point, a 10μg/m^3 increase in TSP was associated with an increase of 0.308%, 0.042% and 0.498% in non-accidental deaths of women at high, medium and low temperature, while were higher than the increase of 0.046%, 0.002%and 0.338% of men. In the model with P_{25}/P_{75} split point as the temperature stratification, the increased percentage of women were 0.318% and 0.171% respectively in high and low temperature layer, were higher than men -0.062% and 0.064%. The percentage increase of non-accidental deaths in women was closed to men in medium temperature layer. With the 10μg/m^3 PM_{10} increase, the percentage of mortality of women will increase 0.814%, 0.219% and 0.638% in high, medium and low temperature when P_{20}/P_{80} as the split point, while mortality of men will increase -0.057%, 0.085% and 0.263%.In the model with P_{25}/P_{75} split point, the increased percentage of women were 1.160%, 0.194% and 0.452% in high, medium and low temperature layer, were also higher than men0.058%, 0.083% and 0.154%.

Conclusion The interaction on daily non-accidental deaths between atmospheric particles matter and daily average temperature in different gender was different. The impact on women was more than men.